

brief
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PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

February 7, 2002

Applicant: John CAHILL

For: LAMINATE WALL STRUCTURE

Serial No.: 08/982 559 Group: 1771

Filed: December 2, 1997 Examiner: Guarriello

Atty. Docket No.: NSP Case 5

Assistant Commissioner for Patents
Washington, DC 20231

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APPELLANT'S SUPPLEMENTAL BRIEF ON APPEAL

Sir:

This is an appeal from the decision of the Examiner,
dated August 14, 2001, finally rejecting Claims 2-26.

REAL PARTY IN INTEREST

National Shelter Products is the real party in interest
and the Assignee of the present application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences with the
present application.

STATUS OF CLAIMS

Claim 1 has been canceled. Claims 2-26 are pending and
are the claims on appeal.

STATUS OF AMENDMENTS

An Amendment After Final Rejection was not filed in the
present application.

SUMMARY OF THE INVENTION

Appellant's invention, as defined by independent
Claim 23, is directed to a wall structure contained in a
building structure that is exposed to transverse wind loading

(specification page 2, lines 23-27), in which the improvement comprises the wall structure contains a first layer having a density of about 0.5-3 pounds per cubic foot and a second, reinforcing layer selected from the group consisting of a polymer fabric, a biaxially oriented polymeric film and a fiberglass reinforced material directly bonded to the first layer (specification page 2, lines 28-35) and having a mechanical strength of at least 46 pounds per square foot (specification page 8, line 29).

Claim 2 limits Claim 23 in requiring that a third layer comprising a cellulosic material be laminated to the second, reinforcing layer (specification page 3, lines 25-27).

Claim 3 limits Claim 23 in requiring that the first layer comprise a foamed material (specification page 3, lines 28 and 29).

Claim 4 limits Claim 3 in requiring that the foamed material is an organic material (specification page 3, lines 29-31).

Claim 5 limits Claim 4 in requiring that the organic material is selected from the group consisting of polystyrene and polyurethane (specification page 3, lines 29 and 30).

Claim 6 limits Claim 23 in requiring that the first layer comprise a fiberboard material (specification page 3, lines 28 and 29).

Claim 7 limits Claim 23 in requiring that the second, reinforcing layer be a polymeric fabric made of a thermoplastic material (specification page 3, lines 34 and 35).

Claim 8 limits Claim 7 in requiring that the thermoplastic material is selected from the group consisting of polyethylene and polypropylene (specification page 3, lines 36 and 37).

Claim 9 limits Claim 7 in requiring that the polymeric fabric is woven (specification page 4, lines 3 and 4).

Claim 10 limits Claim 7 in requiring that the polymeric fabric is unwoven (specification page 4, lines 3 and 4).

Claim 11 limits Claim 23 in requiring that the second, reinforcing layer is a biaxially oriented polymeric film made of a thermoplastic material (specification page 4, lines 5 and 6).

Claim 12 limits Claim 11 in requiring that the thermoplastic material is a polyolefin or a polyester (specification page 4, lines 5-7).

Claim 13 limits Claim 23 in requiring that the second, reinforcing layer is a fiberglass reinforced material (specification page 3, lines 21-24).

Claim 14 limits Claim 13 in requiring that the material is a paper or a plastic (specification page 3, lines 22-24).

Claim 15 limits Claim 2 in requiring that the cellulosic layer have a plastic film formed thereon (specification page 4, lines 24-26).

Claim 16 limits Claim 2 in requiring that the cellulosic layer be impregnated with a member selected from the group consisting of a resin, an adhesive and mixtures thereof (specification page 4, lines 27-29).

Claim 17 limits Claim 16 in requiring that the cellulosic layer be impregnated with a urethane (specification page 4, lines 29 and 30).

Claim 18 limits Claim 16 in requiring that the cellulosic layer be impregnated with a polyester (specification page 4, lines 29 and 30).

Claim 19 limits Claim 16 in requiring that the cellulosic layer be impregnated with a urethane and a polyester (specification page 4, lines 29 and 30).

Claim 20 limits Claim 16 in requiring that the cellulosic layer be impregnated to a degree of saturation of from about 3 to 100% (specification page 5, lines 1-3).

Claim 21 limits Claim 16 in requiring that the cellulosic layer be impregnated to a degree of saturation of from about 25 to 50% (specification page 5, lines 3 and 4).

Claim 22 limits Claim 16 in requiring that the cellulosic layer be impregnated to a degree of saturation of about 35% (specification page 5, lines 4 and 5).

Claim 24 limits Claim 23 in requiring that the cellulosic layer be laminated to the second, reinforcing layer, an exterior layer laminated to the cellulosic layer and an interior layer laminated to the first layer (specification page 5, lines 24-26).

Claim 25 limits Claim 24 in requiring that the second, reinforcing layer be a biaxially oriented polymeric film (specification page 3, lines 21-23).

Claim 26 limits Claim 23 in requiring that the second, reinforcing layer is a biaxially oriented polymeric film or a fiberglass reinforced material.

ISSUES

The first issue presented for review is whether Claims 3-5, 13, 14 and 26 are unpatentable under 35 USC 102(b) over Minnick. The second issue presented for review is whether Claims 2-26 are unpatentable under 35 USC 103(a) over Hartman in view of Minnick.

GROUPING OF CLAIMS

The claims do not all stand or fall together. There are five groupings of claims. The first grouping of claims is Claim 23, 3-6, 13, 14 and 26. The second grouping of claims is Claim 2, 15-22 and 24. The third grouping of claims is Claims 7-10. The fourth grouping of claims is Claims 11 and 12. The fifth grouping of claims is Claim 25.

ARGUMENT

The presently claimed invention is directed to a wall structure that is contained in a building structure that is exposed to transverse wind loading in which the improvement comprises the wall structure being made up of a first layer having a density of from 0.5-3 pounds per cubic foot and a second, reinforcing layer selected from the group consisting of a polymer fabric, a biaxially oriented polymeric film and a fiberglass-reinforced material directly bonded to the first layer. The wall structure of the present invention has a mechanical strength of at least 46 pounds per square foot.

As pointed out in the Responses filed during the prosecution of the present application, the instant invention has been designed to allow the use of a foam or lightweight insulated material in hurricane-prone geographic areas. At the present time, builders have to eliminate energy-saving foam panel insulated materials or use alternative building methods in order to provide affordable construction in hurricane-prone areas. The use of foam at the present time also necessitates support from wood sheathing or other structural raw sheathing components which raises the cost of the construction and makes it more complicated. The present invention gives an economically viable alternative that can improve energy efficiency and/or lower the cost of construction.

The Minnick reference discloses plastic-based laminates comprising fiber-reinforced thermoset sheets, lofted fiber-reinforced thermoplastic sheets and a foam core layer. These laminates are disclosed as being suitable for use as building panels in the modular home segment of the construction industry. Specific embodiments shown in this reference include a low density fiber-reinforced thermoplastic sheet core provided between two parallel sheets of high density fiber-reinforced thermoset resins and a second embodiment having a core of polymeric foam laminated between two parallel

inner fiber-reinforced thermoplastic resin layers, each of which face an outer layer of fiber-reinforced thermoplastic resin.

With respect to Claims 3-6, 13, 14, 23 and 26, the Minnick reference has no disclosure with respect to the plastic laminate disclosed there being used in a wall structure that is contained in a building structure exposed to transverse wind loading or having a mechanical strength of at least 46 pounds per square foot. As discussed in the present specification, the laminate wall structure of the present invention is unexpectedly suitable for use in wall sheathing applications exposed to transverse wind loading. The inventive material is capable of meeting current building code requirements, has a lighter weight, is less expensive and has better insulation properties than materials conventionally being used. Given these advantages, it is respectfully submitted that Claims 3-6, 13, 14, 23 and 26 are patentably distinguishable over the Minnick reference.

Claim 2, 15-22 and 24 are even further distinguished over the Minnick reference in that they require that a cellulosic layer be laminated to the second, reinforcing layer. Although Minnick in the discussion of the "Background of the Invention" discloses lightweight, high strength fire resistant structures having a compressed fiber reinforced thermoplastic layer covering a foam or wooden substrate are known in the art, this reference has no disclosure with respect to both a foam and a cellulosic substrate. As such, Claims 2, 15-22 and 24 are even further distinguished over this reference.

Claims 7-10 require that the second, reinforcing layer be a polymeric fabric made of a thermoplastic material. Minnick has no disclosure with respect to a polymeric fabric being used in the plastic-based laminate disclosed there.

Claims 11 and 12 require that the second, reinforcing layer be a biaxially oriented polymeric film made of a thermoplastic material. Minnick has no disclosure with

respect to a biaxially oriented polymeric film being used in the plastic-based laminates disclosed there. As such, Claims 11 and 12 are patentably distinct from this reference.

Claim 25 requires that a cellulosic layer be laminated to the second, reinforcing layer and that the second, reinforcing layer be a biaxially oriented polymeric film. The Minnick reference has no disclosure of either a cellulosic layer being laminated to the second, reinforcing layer or the second, reinforcing layer being a biaxially oriented polymeric film. As such, Claim 25 clearly is patentably distinguishable over the Minnick reference.

The Hartman reference has been used in combination with Minnick to reject all of the currently pending claims under 35 USC 103(a). The Hartman reference discloses an insulated panel made up of a rigid foam layer of a synthetic organic polymeric foam, a protective weathering layer of a thermoplastic sheet material and a generally flexible backer layer of stereoreticulate material provided between the foam and weather layers. The backer layer is disclosed as being a woven or non-woven fibrous material with the fibers being of a reinforcing nature such as asbestos, fiberglass or aluminum. The backer layer has interstices of a sufficient size to permit entrance of the resin produced in the foaming process into the interstices of the backer layer adjacent the foam layer but the foam layer does not completely penetrate through the thickness of the backer layer. The panels of Hartman are used in insulating and protecting walls and roofs and not as the wall structure per se. The backer layer 16 has a border portion 32 of resin from the foaming process which fills the interstices.

With respect to Claims 3-6, 13, 14, 23 and 26, Hartman in combination with Minnick does not suggest the advantages associated with the inventive wall structure being contained in a building structure exposed to transverse wind loading and the wall structure having a mechanical strength of at least 46

pounds per square foot. As discussed previously, the present invention allows for the use of a foam or lightweight insulated material without the need of support from wood sheathing or other structural raw sheathing components used in hurricane-prone geographic areas and thereby provides an economically viable alternative that can improve energy efficiency and/or lower the cost of construction. As such, Claims 3-6, 13, 14, 23 and 26 are felt to be patentably distinguishable over Hartman in combination with Minnick.

Claims 2, 15-22 and 24 require that a third layer comprising a cellulosic material be laminated to the second, reinforcing layer. Neither Hartman nor Minnick disclose the presence of both a foam layer and a cellulosic layer as are required in Claims 2, 15-22 and 24. As such, it is respectfully submitted that Hartman in combination with Minnick does not even present a showing of prima facie obviousness under 35 USC 103(a) with respect to these claims.

Claims 7-10 require that the second, reinforcing layer be a polymer fabric made of a thermoplastic material. The Examiner states in the final rejection that Hartman discloses a polyethylene weathering layer in Column 2, lines 40-60, which meets the limitations of the "polymeric" fabric layer. However, the backer layer 16 is interposed between the foam layer 12 and the weathering layer 14. The backer layer 16 of Hartman does not correspond to the second, reinforcing layer of the present invention in that it does not come into contact with the foam layer 12. As recognized by the Examiner, the backer layer clearly does not correspond to the polymeric fabric layer of the present invention as the fibrous material disclosed there is of an inorganic nature. Since the Minnick reference also has no disclosure with respect to a polymeric fabric being directly laminated to the organic foam layer, it is respectfully submitted that Hartman in combination with Minnick does not even present a showing of prima facie obviousness under 35 USC 103(a) with respect to Claims 7-10.

Claims 11 and 12 require the second, reinforcing layer to be a biaxially oriented polymeric film made of a thermoplastic material. Neither Hartman nor Minnick disclose the use of a biaxially oriented polymeric film as a layer disposed next to a foam layer or any equivalence between a biaxially oriented polymeric film and the reinforcing layers disclosed there. Therefore, Hartman in combination with Minnick do not even present a showing of prima facie obviousness under 35 USC 103(a) with respect to Claims 11 and 12.

Currently presented Claim 25 requires the presence of both a cellulosic layer laminated to the second, reinforcing layer and the second, reinforcing layer being a biaxially oriented polymeric film. Neither Hartman nor Minnick disclose the presence of either a cellulosic layer being present in addition to a foam layer and the cellulosic layer being laminated to a biaxially oriented polymeric film as a reinforcing layer. As such, it is respectfully submitted that Hartman in combination with Minnick does not even present a showing of prima facie obviousness under 35 USC 103(a) with respect to the subject matter of Claim 25.

CONCLUSION

For the reasons advanced above, it is respectfully submitted that the Examiner's rejection of Claims 2-26 are in error. Reversal of the Examiner's rejection of the currently presented claims are respectfully solicited.

Respectfully submitted,

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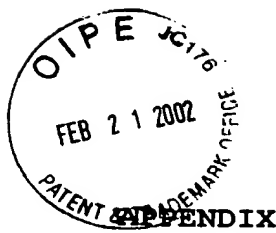
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23. (Amended) In a wall structure that is contained in a building structure exposed to transverse wind loading, the improvement comprising said wall structure containing a first layer having a density of about 0.5-3 lb./ft.³ and a second, reinforcing layer selected from the group consisting of a polymer fabric, a biaxially oriented polymeric film and a fiberglass reinforced material directly bonded to the first layer, ^{the wall structure} and having a mechanical strength of ^{about} at least 46 lbs./ft.².

2. (Amended) The wall structure of Claim 23, additionally comprising a third layer comprising a cellulosic material laminated to said second, reinforcing layer.

3. (Amended) The wall structure of Claim 23, wherein said first layer comprises a foamed material.

4. The wall structure of Claim 3, wherein said foamed material is an organic material.

5. The wall structure of Claim 4, wherein said organic material is selected from the group consisting of polystyrene and polyurethane.

6. (Amended) The wall structure of Claim 23, wherein said first layer comprises a fiberboard material.

7. (Amended) The wall structure of Claim 23, wherein said second, reinforcing layer is a polymer fabric made of a thermoplastic material.

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8. The wall structure of Claim 7, wherein said thermoplastic material is selected from the group consisting of polyethylene and polypropylene.

9. The wall structure of Claim 7, wherein the polymer fabric is woven.

10. The wall structure of Claim 7, wherein the polymer fabric is unwoven.

11. (Amended) The wall structure of Claim 23, wherein said second, reinforcing layer is a biaxially oriented polymeric film made of a thermoplastic material.

12. The wall structure of Claim 11, wherein the thermoplastic material is a polyolefin or a polyester.

13. (Amended) The wall structure of Claim 23, wherein the second, reinforcing layer is a fiberglass reinforced material.

14. The wall structure of Claim 13, wherein the material is a paper or a plastic.

15. The wall structure of Claim 2, wherein the cellulosic layer has a plastic film formed thereon.

16. The wall structure of Claim 2, wherein the cellulosic layer is impregnated with a member selected from the group consisting of a resin, an adhesive and mixtures thereof.

17. The wall structure of Claim 16, wherein said cellulosic layer is impregnated with a urethane.

18. The wall structure of Claim 16, wherein said cellulosic layer is impregnated with a polyester.

19. The wall structure of Claim 16, wherein said cellulosic layer is impregnated with a urethane and a polyester.

20. The wall structure of Claim 16, wherein said cellulosic layer is impregnated to a degree of saturation of from about 3 to 100%.

21. The wall structure of Claim 16, wherein said cellulosic layer is impregnated to a degree of saturation of from about 25 to 50%.

22. The wall structure of Claim 16, wherein said cellulosic layer is impregnated to a degree of saturation of about 35%.

24. The wall structure of Claim 23, wherein a cellulosic layer is laminated to the second, reinforcing layer, an exterior layer is laminated to the cellulosic layer and an interior layer is laminated to the first layer.

25. The wall structure of Claim 24, wherein said second, reinforcing layer is a biaxially oriented polymeric film.

26. The wall structure of Claim 23, wherein said second, reinforcing layer is a biaxially oriented polymeric film or a fiberglass reinforced material.